EOSDIS IV&V
Monthly Status Report

For the Period 11/1/96 to 11/30/96

(Deliverable 0201D.3)

December 16, 1996

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Table of Contents

1. PERFORMANCE INFORMATION

1.1 Contract Organization Chart

Exhibit 1-1 illustrates the current organizational structure of the EOSDIS IV&V team. The approximate number of personnel assigned to each technical task is also indicated.

1.2 Programmatic Information

a) Key Recent Accomplishments

- Submitted bi-weekly issue summaries to ESDIS management on 11/4/96 and 11/25/96 highlighting key ECS development issues that warrant close monitoring.

- Coordinated ECS Release B Replan analysis and provided rapid response e-mail to ESDIS on 11/21/96. The approach was instrumental in helping ESDIS to form analysis teams (which included IV&V) to further evaluate the Replan by 12/4/96.

- Provided inputs to task SOWs for next contract period (i.e., 1/97 through 9/97).

- Ensured on-time delivery of contract deliverables as indicated in Exhibit 1-2.

- Provided permanent office space to CSC personnel at the Greenbelt facility to promote a more integrated approach to EGS I&T activities.

- Continued on-going training of contract personnel. Training in November included Tivoli System Administrator training (3 people - 11/4 through 11/6); Rational Rose training (12 people - 11/21 and 11/22); Goddard lecture on Limitations of Traditional Software Estimation Techniques (1 person - 11/21); and internal training on OMT (10 people - 11/26). Contract personnel also participated in self-paced tutorials at the Goddard Learning Center in Windows 95 and UNIX.

b) Planned Activities

- Support ESDIS in ongoing Release B Replan activities.

- Continue supporting NASA initiative to move toward Performance Based Contracting (PBC) by participating in regular ESDIS-Intermetrics planning sessions. Next scheduled meeting is 1/7/97.

- Provide final inputs for new task SOWs for the period 1/1/97 through 9/30/97.

- Participate in Executive Council Briefing scheduled for 12/4/96.

Exhibit 1-1: Org Chart (Landscape)

Expected Date Due	Dependency	Milestone/ Deliverable	Task #	Status*	Comments
11/1/96		**EGS I&T Program Test Matrix (Initial)**	**11**	**C**	**Submitted on time.**
11/4/96		**Bi-weekly E-mail Issues Summary**	**1**	**C**	**Submitted on time.**
11/8/96		**Release B Data Server Evaluation Strategy Briefing**	**8**	**C**	**Submitted on time.**
11/20/96		**ISE Confidence Test Program Electronic File cabinet Version 1.0**	**4**	**C**	**Completed on time. System presented to EGS I&T personnel at regularly scheduled TICTOC meeting.**
11/15/96		**ECS Release A Test Witness Plan (Preliminary)**	**8**	**C**	**Submitted on time.**
11/15/96		**EGS I&T Program Test Packages (Baseline)**	**11**	**C**	**Submitted on time.**
11/26/96		**RTM Analysis TAM (Quantitative Assessment)**	**8**	**C**	**Submitted on time.**
11/29/96		**ICWG Open Interface Issues Summary Report**	**8**	**C**	**Submitted ahead of schedule on 11/19/96.**
11/29/96		**EGS Integration Test Tool Demonstration**	**11**	**C**	**Conducted ahead of schedule on 11/20/96.**
12/2/96		**ECS Release A Test Witness Plan (Final)**	**8**	**C**	**Submitted on time.**
12/2/96		**EGS I&T Program Test Matrix (Update)**	**11**	**C**	**Submitted ahead of schedule on 11/15/96.**
12/6/96		**Release B External Interfaces CARA TAM**	**8**	**C**	**Submitted on time.**
12/10/96		RTM Analysis TAM (Qualitative Assessment)	8	IP	
12/30/96		ISE PITS WWW Browser Issue Reporting/Metrics Version 3.0	4	IP	
12/31/96		TAMs on Interface Documents	8	O	
12/31/96		Preliminary ASTER-to-EOSDIS Interface Evaluation TAM	8	O	
12/31/96		Monthly Metrics Report	8	O	

* C = Completed, IP = In Process, O = Open, D = Delayed, CX = Canceled

EXHIBIT 1-2: Status of Milestones/Deliverables

- Develop Significant Event synopses for the current award fee period in preparation for Performance Evaluation Board (PEB) review. Also plan briefing to PEB.

- Continue on-going training of personnel, including Tivoli Overview training scheduled for 12/9 through 12/11.

1.3   Technical Task Information

Task # 4: IV&V Infrastructure and Tool Development

a) Task Accomplishments

- Delivered the Confidence Test Program Electronic File Cabinet (CTP-EFC), Version 1.0.

- Demonstrated the CTP-EFC as well as the Test Management Database (TMDB) to ESDIS personnel on 11/20/96.

- Prototyped a derivative of the TMDB that more directly supports the test witnessing effort under Task 8. This prototype tool, called the Test Verification Database (TVDB) was demonstrated to IV&V personnel on 11/20/96.

- Ingested the ECS RTM baseline that was received on 11/8/96. Produced metrics reports relative to the new baseline. Also, transferred the ECS RTM baseline requirements to the ISE requirements table to give TMDB users access to the latest requirements data.

- Updated the EDOS RTM requirements baseline received from Steve Adamson. The IRD class requirements now have criticality assignments.

- Posted all updated Confidence Test Package baseline documents received on 11/15/96 into the EGS I&T document library.

b) Issues/Concerns

- None.

c) Subcontractor Performance

- EWA performance has been very good. Specific activities included maintaining and operating the Test Management Database (TMDB).

d) Planned Activities

- Deliver Version 3.0 of the PITS WWW Browser including string search and metrics reports.

- Release TMDB Version 2.7 with requested session planning, result capture, and reporting changes.

- Release TVDB Version 1.0 in support of planned test witnessing activities. Metrics and reporting features will not be available until Version 2.0 is released.

- Install additional memory into select workstations and X-terminals upon receipt of hardware.

- Install a new multipack disk to the WV Sun SPARCserver 1000, when received.

- Continue support (functional enhancement and maintenance) for the ARDB, PITS, and TMDB client/server tools.

- Continue maintenance for the EOSDIS IV&V Homepage, EGS I&T Homepage, and the PITS WWW Browser Homepage.

- Support program meetings and briefings as required.

Task # 7: Programmatic and Process Analysis

a) Task Accomplishments

- Modified and enhanced the CCM prototype that was delivered on 10/18/96. Continued to make improvements to the system, including implementing additional constraint checking and GUI screens for more objects.

- Revised and enhanced CCM user documentation.

- Finished analyzing Chapter V.2 from Dr. Barkstrom, entitled "Measurement Sets and Earth Measurement Types." This is a background chapter relating to the Hardware Model. No coding can be initiated as yet, based on the content of this chapter.

- Continuing to evaluate the use of ObjectAda (Ada 95) instead of Active Ada (Ada 83) as the compiler for the Windows NT version of the CCM. This transition is expected to reduce the complexity of the interface between Teleuse (GUI builder) and the Ada code.

b) Issues/Concerns

- The CCM development team needs additional source documentation to remain productive.

c) **Subcontractor Performance**

- Not Applicable.

d) **Planned Activities**

- Develop and refine Windows NT version of the Enhanced System Prototype.

- Continue to make improvements to the system, including implementing additional constraint checking and GUI screens for more objects.

- Continue working on CCM Hardware Model based on availability of source documentation.

- Participate in seminar-demo of CCM Hardware Model to be held at both Langley and Goddard once an approved model is available.

- Participate in next CCM Executive Panel Meeting, when scheduled.

- Support other program meetings and briefings as required.

Task # 8: Development Life Cycle Analysis

a) **Task Accomplishments**

General:

- Revised current SOW (9/96 through 12/96) and submitted to COTR.

Planning and Rapid Analysis Team:

- Prepared and delivered a Monthly Metrics Report for ECS development activities for November. This report represents metrics generated under former Tasks 5 and 6. Report includes quantitative analysis of requirements, design, test case, and verification traces from the 11/8/96 RTM.

- Attended ECS Release B Replan briefing on 11/18 96. Conducted a detailed analysis of the proposed replan, documented findings, and submitted to ESDIS management.

- Refined CARA development methodology. Conducted Release B external interfaces CARA and initiated development of TAM documenting results.

System and Interfaces Analysis Team:

- Submitted to ESDIS a strategy for conducting an analysis and audit of the ECS Release B Data Server.

- Performed quantitative analysis of 11/8/96 RTM and submitted findings in conjunction with November Monthly Metrics Report.

- Began qualitative analysis of 11/8/96 RTM; findings are to be submitted in a TAM due in December.

- Completed planning and initiated analysis of ECS-to-ASTER Interface.

- Input revised issue status information and new issues, as provided by book bosses, into PITS-ICWG repository (ongoing). Delivered full issue summary report and metrics on 11/19 at ICWG status meeting.

- Prepared and submitted Impact Analysis Reports for the following CCRs:

505-41-19-003	Remove TBDs & incorporate comments into the NOAA IRD
505-01-35-063	Level 2 Changes due to Reshape
505-10-20-002	Update to reflect the new ICWG/CCB process improvements
505-41-36-003	Remove TBDs & incorporate comments into the NOAA ICD
505-41-17-002	Correct Inconsistencies Between the NSI IRD and ICD

- Started analyzing the following seven CCRs:

505-41-40-002	Remove TBDs and make Appropriate Changes to the Polling with Delivery Record (PDR) Section to the LaRC DAAC ICD
505-41-18-004	Define Change Control Procedures in the ASTER ICD
505-41-40-003	Remove NIMBUS 7 and METERO 3 TOMS Data from the GSFC DAAC ICD
505-41-39-003	Add DAO Dataflow for Release A Ingest from LaRC
505-42-01-002	Baseline the EOS AM-1 FDD ECS ICD
505-01-41-126	PGS Requirement Traceability to Level 2

505-10-26-001	Baseline the ESDIS Risk Mgmt Plan

System Modeling Analysis Team:

- Supported Chris Daly on BONeS/ECS modeling, outlining possible tasks for IV&V SOW for next period of performance.

- Continued review of documentation and models from ECS contractor, previous IV&V modeling analysts, and other modeling efforts, as well as relevant Internet modeling and simulation materials.

- Completed analysis of BONeS maintenance agreement and received acceptance of proposal to alter license to reduce maintenance costs as well as purchase "Project Editor" to enhance IV&V assessment of ECS contractor simulations.

- Developed IV&V Internet web page for modeling and simulation issues. The intention of this web site is to foster better communication among various EOS modeling teams.

System Security Analysis Team:

- Submitted TAM on Release A CSMS test case criticality issues. Recommended that additional tests be conducted during ECS I&T or AT for security-related requirements.

- Reviewed security-related test cases to be witnessed during upcoming ECS Release A I&T. Confirmed that they appropriately test the specified requirements.

- Reviewed EGS7 Security Test Package for FOS segment. Verified that security requirements will be adequately addressed during upcoming EGS I&T.

- Recommended changes to the ESDIS Configuration Management Plan such that it would include security aspects within its scope. Submitted recommendations to CSC on 11/25/96 as a follow-up to PITS TIM-1153.

- Updated the CSMS and SDPS components of the EOSDIS Security Requirements to Test Cases Matrix. Submitted results to CSC for incorporation into matrix.

Test Analysis and Witnessing Team:

- Delivered Preliminary ECS Test Witness Plan. Received comments from ESDIS to be incorporated into final version of plan to be submitted in December.

- Attended daily ECS I&T status briefings at GSFC.

- Completed review of test procedures TC021 and TS049 and submitted to ESDIS and the ECS I&T team. Initiated review of revised test procedures for TS025.

b) Issues/Concerns

- Lack of a current ECS Release B design continues to constrain level of design analysis achievable by IV&V.

- Lack of a defined ECS Release A test process, including detailed I&T and AT schedules and updated test procedures, impacts effectiveness of IV&V planning and execution of Release A Test witnessing activities.

- The BONeS model has had no new development since the spring. The end-to-end analytical model has been implemented in code but has not been verified or validated. The Combined Analytical Petrinet (CAP) model, created by Daniel Menasce for HITS, has also not been utilized other than the 3Q95 validation efforts.

c) Subcontractor Performance

- CTA is leading the SIA Team. Their technical staff also supports other integrated analysis teams within Task 8. Their performance has been very good.

- SES is leading the TAW Team. Their technical staff also supports other integrated analysis teams within Task 8. Their performance has been very good.

d) Planned Activities

General:

- Attend ECS Monthly Progress Reviews (MPRs) to gain insight into planning, schedule, progress, and issue aspects of ECS Releases A and B.

- Work to resolve outstanding Technical Issue Memoranda (TIMs).

Planning and Rapid Analysis Team:

- Develop and deliver December Monthly Metrics Report.

- Continue to support ESDIS in their review and assessment of ECS Release B Replan.

- Develop and submit Release B External Interfaces CARA TAM.

System and Interfaces Analysis Team:

- Complete impact analysis for the seven CCRs identified above as well as others which are received during November.

- Complete analysis of ECS-to-ASTER interface and submit TAM documenting findings.

- Complete qualitative analysis of 11/8/96 RTM and submit TAM documenting findings.

- Start quantitative analysis of December RTM upon receipt of database.

- Participate in ICWG meetings and attend SIT and NT meetings.

- Continue data entry into PITS ICWG repository, and present at next ICWG status meeting on 12/17/96.

System Modeling Analysis Team:

- Continue reviewing ECS contractor models, including CAP, End-to-end model, and BONeS dynamic simulation. Focus on Data Server portions of BONeS simulation.

- Explore use of thread analysis simulations to support EGS I&T validation of performance requirements.

- Consolidate all previous IV&V documents on ECS models and simulations onto the Web page.

System Security Analysis Team:

- Witness security-related tests during ECS Release A I&T.

- Participate in rewrite of ESDIS CM Plan as needed.

- Continue updating EOSDIS Security Requirements to Test Cases Matrix for FOS, EBNet, and EDOS.

- Continue evaluating SATAN and ISS network tools to gain an enhanced understanding of their usefulness in the EOSDIS environment.

Test Analysis and Witnessing Team:

- Continue attending ECS I&T status briefings and ESDIS test coordination meetings.

- Continue analyzing updated ECS Release A test procedures and requirements to test case mappings (pending RTM and test procedures updates).

- Begin witnessing ECS test execution.

- Begin analysis of mission critical RBR coverage by mission critical test cases.

Task # 11: EOS Ground System Integration and Test

a) Task Accomplishments

EGS Version 1 Test Planning:

- Supported planning for ECS/TSDIS message exchange testing.

- Completed ECS Release A FOS Acceptance Test (AT) witnessing.

- Initiated ECS Release A SCDO test witnessing.

- Completed analysis of ECS external interface white paper.

Integration Schedule Tracking and Analysis:

- Revised Level 4 I&T schedule based on ECS Release B replan.

- Provided Version 2 "what-if" priority analysis on Science test packages.

Integration Test Tool Definition and Plans:

- Completed ETS testing support.

- Collected monthly test package metrics.

- Facilitated the demonstration of the Test Management Data Base (TMDB) and Electronic File Cabinet (EFC) at TICTOC meeting on 11/20/96.

- Completed online EGS I&T Test Summary Matrix on schedule, on 11/1/96. Completed revised version of matrix on 11/15/96, two week ahead of schedule.

EGS Confidence Test Planning:

- Delivered updated Confidence Test Packages on schedule, on 11/15/96. This included Flight Systems and Ops IPT packages (final), as well as Science Systems and Ops IPT, and Systems IPT packages (intermediate).

- Supported ECT 1 planning meetings.

- Supported AM-1 MOR.

- Attended and coordinated with ESDIS Test Data Set working group.

- Supported EGS I&T assessment of ECS Release B Replan I&T/AT activities.

b) Issues/Concerns

- We need hands-on access to the ECS Release A SCDO system, documents, and training in order to achieve the compressed schedule objective (i.e., originally 8 months, now compressed to 5). To date, Hughes has been reluctant to allow this.

- We need a clear definition from Hughes on the scope of the upcoming ECS releases in order to complete our EGS I&T replanning. We are particularly concerned with the impact of configuration changes (both within A, as well as from A to B) on regression testing. We are also concerned with the content of B0 vs B1 for Version 2 test planning.

- The results of TSDIS-ECS testing indicate that the developer did not sufficiently complete unit testing before beginning interface tests. This reinforces a concern that component level testing, including the testing of Mission Critical requirements, may not be sufficiently complete when EGS I&T receives the system(s) for certification test. Impacts to schedule and/or the quality of the delivered system could result, given that we have streamlined the test process so as not to duplicate scope.

- We need to continue developing relationships with our joint test partners. This is especially important when trying to schedule resources.

c) Subcontractor Performance

- Subcontractor performance has been very good.

d) Planned Activities

- Complete scheduled portion of FSO IPT V1 Confidence Test Package execution.

- Revise SSO and System IPT V1/V2 CTPs, including procedure information based on ECS-TSDIS test review.

- Verify Requirements mapping for all CTPs.

- Continue external test environment scheduling for both EGS I&T preparation and formal test execution.

- Prototype the use of TMDB to collect test execution metrics for reporting purposes.

- Support TICTOC and other program briefings/meetings as required.

2.   FINANCIAL/CONTRACTUAL INFORMATION

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Has Been Removed

Due to Proprietary Content.